

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Examiner: Babar Sarwar : PATENT APPLICATION

In re application of: :  
**Reinhold Braam et al.**

Serial No.: 10/580,337 : **METHOD FOR ESTABLISHING A  
CONNECTION BETWEEN A SERVICE**

Filed: May 23, 2006 : **REQUESTER (CLIENT) AND A SERVICE  
PROVIDER (SERVER) IN A**

Group Art Unit: 2617 : **DECENTRALIZED MOBILE WIRELESS  
NETWORK**

Confirmation No.: 3216 :

**BRIEF ON APPEAL**

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### **Real Party in Interest**

The real party in interest is Siemens Enterprise Communications GmbH and its related United States company Siemens Enterprise Communications Inc.

### **Related Appeals and Interferences**

There are no related appeals or interferences.

### **Status of Claims**

Claims 19-38 have been and are currently pending in the application. The status of the claims is that claims 19-38 have been rejected. Claims 1-18 have been canceled. Applicants are appealing the rejection of claims 19-38.

### **Status of Amendments**

No amendment was filed in response to the Final Office Action of July 19, 2010 (hereafter "the Office Action"), from which this appeal is taken. A notice of appeal was filed in response to the Office Action to initiate the present appeal.

### **Summary of Claimed Subject Matter**

The pending claims are directed to a method for establishing a connection between a service requester device and a service provider device in a decentralized mobile wireless network and a decentralized mobile wireless network system. (Specification, at page 1, lines 10-17 (¶ 2); Figures 5-6).<sup>1</sup> In Figures 5 and 6, an embodiment of the system and method are illustrated that shows the service requester device 1 communicating with routers 2 and a service provider device 3. Embodiments of the system and method may be configured to permit a service requester to

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<sup>1</sup> Citations to the specification by paragraph numbers identify paragraphs in the Substitute Specification submitted on May 23, 2006. The paragraph numbers are also provided herewith along with specific citations to page and line numbers of the Specification to help make the cited portions of the Specification more clear. It should be appreciated that citations to a particular portion of the Specification indicate that there is at least support for those limitations at the cited portion(s) of the Specification.

locate a service provider in a way that permits a reduction in signaling overhead. (Specification, at page 10, lines 2-7 (§ 39)).

Claim 19 is an independent claim directed to a method for establishing a connection between a service requester device and a service provider device in a decentralized mobile wireless network. (Specification, at page 1, lines 10-17 (§ 2), page 4, lines 17-25 (§ 20), page 5, lines 16-24 (§§ 25-27) and page 9, lines 1-22 (§§ 36-37)). The decentralized mobile wireless network comprises a plurality of Internet Protocol (IP) routers that each includes a routing table. (Specification, at page 9, lines 1-14 (§ 36); Figures 5-6). The method includes the step of a service requester device sending a service discovery request message towards a service provider device via the plurality of IP routers. (Specification, at page 9, lines 1-7, (§36)). The service discovery request message is received by each router and each router adds routing information pertaining to the received service discovery request message in the routing table of that router. (Specification, at page 9, lines 4-14, (§36)). The service discovery request is also received by the service provider device. (Specification, at page 9, lines 15-25, (§37)). The service provider device responds to the received service discovery request message with a service discovery reply message to the service requester device. (Specification, at page 9, lines 15-25, (§37)). At least a portion of the IP routers adds routing information of the received service discovery reply message to the routing table. *Id.*

Claim 20 depends from claim 1 and requires the service discovery request message to include at least one element of a router request. Support for the limitations of claim 20 may be found at least at page 9, lines 3-5 (§ 36) of the Specification.

Claim 21 depends from claim 19 and requires the service discovery reply message to include a route reply incorporating all information elements of the router reply. Support for the

limitations of claim 21 may be appreciated from at least page 9, lines 17-25 (§ 37) of the Specification.

Claim 22 depends from claim 19 and requires the service discovery request and service discovery reply messages to be in accordance with an Ad hoc On Demand Distance Vector Routing Protocol or a Dynamic Source Routing Protocol for Mobile Ad hoc Networks. Support for the limitations of claim 22 may be understood from at least page 5, lines 20-22 (§ 26) of the Specification.

Claim 23 depends from claim 22 and requires the Ad hoc On Demand Distance Vector Routing Protocol or a Dynamic Source Routing Protocol for Mobile Ad hoc Networks of the request message and the reply message to be extended such that the router table of a router is updated with routing information after the router receives the service discovery request message or the service discovery reply message. Support for the limitations of claim 23 may be found at least at page 6, lines 1-4 (§ 28) of the Specification.

Claim 24 depends from claim 19 and requires the service requester device to be a client and the service provider device to be a server. (Specification at page 9, lines 1-11 (§ 36). Claim 24 also requires the at least a portion of the IP routers to add routing information of the received service discovery reply message to the routing table of that router such that a route is traceable from the service requester to the service provider. (Specification at page 9, lines 15-25 (§ 37).

Claim 25 is an independent claim directed to a method for establishing a connection between a service requester and a service provider in a decentralized mobile wireless network. (Specification, at page 1, lines 10-17 (§ 2), page 4, lines 17-25 (§ 20), page 5, lines 16-24 (§§ 25-27) and page 9, lines 1-22 (§§ 36-37)). The wireless network includes a plurality of routers. (Specification, at page 9, lines 1-14 (§ 36); Figures 5-6). Each router has a routing table. *Id.*

The method includes the steps of the service requester sending a multicast service discovery request message towards a service provider via the routers. (Specification, at page 9, lines 1-14 (§ 36)). Each router receives the service discovery request message. (*Id.*). Each router adds routing information pertaining to the received service discovery request message in the routing table of that router. (*Id.*). The service provider receives the discovery request message. (Specification, at page 9, lines 15-25 (§ 37)). The service provider responds to the received discovery request message with a service discovery reply message. (Specification, at page 9, lines 15-25 (§ 37)). A portion of the routers receives the service discovery reply message. (Specification, at page 9, lines 15-25 (§ 37)). Each router of the portion of the routers adds routing information pertaining to the received service discovery reply message to the routing table of that router so that a route via the portion of the routers is traceable from the service requester to the service provider. (Specification, at page 9, lines 15-25 (§ 37)).

Claim 26 depends from claim 25 and requires the service discovery request message to include an indicator indicating to the routers that the routers should add routing information pertaining to the received service discovery request message to the routing tables of the routers. Support for the limitations of claim 26 may be understood from at least page 9, lines 1-14 (§ 36) of the Specification.

Claim 27 depends from claim 25 and requires the service discovery reply message to include an indicator indicating to the routers that receive the service discovery reply message that routing information pertaining to the received service discovery reply message should be added to the routing tables of the routers. Support of the limitations of claim 27 may be found at least at page 9, lines 15-25 (§ 37) of the Specification.

Claim 28 depends from claim 25 and requires the service discovery request and service discovery reply messages to be in accordance with an Ad hoc On Demand Distance Vector Routing Protocol or a Dynamic Source Routing Protocol for Mobile Ad hoc Networks. Support for the limitations of claim 28 may be understood from at least page 5, lines 20-22 (§ 26) of the Specification.

Claim 29 depends from claim 25 and requires the service provider to be a server and the service requester to be a client. Support for the limitations of claim 29 may at least be appreciated from page 9, lines 1-15 (§§ 36-37) and Figures 5-6.

Claim 30 is an independent claim directed to a decentralized mobile wireless network system that includes a network service available to a service requester and a plurality of Internet Protocol (IP) routers that each has a routing table. (Specification, at page 9, lines 1-15 (§ 36); Figures 5-6). The service requester is configured to transmit a service discovery request comprised of a first routing indicator and information pertaining to a desired service. (Specification, at page 9, lines 1-14 (§ 36)). The service discovery request message is multicasted from the service requester. *Id.* Each router receives the service discovery request message and updates the routing table of that router with routing information pertaining to the received service discovery request message. *Id.* Each service provider of a plurality of service providers is configured to receive the service discovery request message from the service requester. (Specification, at page 9, lines 15-25 (§ 37)). Each of the service providers is configured to transmit a service discovery reply message to the service requester if that service provider determines that the service provider provides a service identified in the service discovery request message. (*Id.*). Each service provider is also configured to send the service discovery reply message such that the network is not flooded with the service discovery reply

message. (Specification, at page 10, lines 2-7 (¶ 39); page 9, lines 26-28 (¶ 38)). At least a portion of the IP routers is configured to receive the service discovery reply message and update the routing tables of the routers with information pertaining to the received service discovery reply message and the service requester is configured to receive the service discovery reply message so that a connection between the service requester and the service provider providing the service identified in the service discovery request message is established in the network. (Specification, at page 9, lines 16-25 (¶ 37)).

Claim 31 depends from claim 30 and requires the portion of the routers to be determined via a route determined from multicasting the service discovery request message. (Specification, at page 9, lines 15-25 (¶ 37)). The service requester is also required to be a client in claim 31 and the service provider is a server in claim 31. (*Id.*).

Claim 32 depends from claim 30 and requires the service discovery request and service discovery reply messages to be in accordance with an Ad hoc On Demand Distance Vector Routing Protocol or a Dynamic Source Routing Protocol for Mobile Ad hoc Networks. Support for the limitations of claim 32 may be understood from at least page 5, lines 20-22 (¶ 26) of the Specification.

Claim 33 depends from claim 30 and requires the service discovery request message to include at least one element of a route request. Support for the limitations of claim 33 may be found at least at page 9, lines 3-5 (¶ 36) of the Specification.

Claim 34 depends from claim 30 and requires the service discovery reply message to be comprised of a route reply. Support for the limitations of claim 34 may be appreciated from at least at page 9, lines 17-20 (¶ 37) of the Specification.



Claim 35 depends from claim 31 and requires the service discovery request message to be comprised of at least one element of a route request. Support for the limitations of claim 35 may be found at least at page 9, lines 3-5 (§ 36) of the Specification.

Claim 36 depends from claim 30 and requires the service discovery reply message to be comprised of a route reply incorporating all information elements of the route reply. Support for the limitations of claim 36 may be appreciated from at least page 9, lines 16-20 (§ 37) of the Specification.

Claim 37 depends from claim 19 and requires a destination address of the service provider device to be unknown by the service requester device when the service discovery request message is sent. Support for the limitations of claim 37 may be appreciated from at least at page 9, lines 1-14 (§ 36) of the Specification.

Claim 38 depends from claim 30 and requires a destination address of the service provider device to be unknown by the service requester device when the service discovery request message is sent. Support for the limitations of claim 38 may be understood from at least at page 9, lines 1-14 (§ 36) of the Specification.

### **Grounds of Rejection to be Reviewed on Appeal**

1. Rejection of claims 19-38 as obvious in view of A Review of Current Routing Protocols for Ad Hoc Mobile Wireless Networks, IEEE, April 1999 to Elizabeth et al. and U.S. Patent Application Publication No. 2005/0041627 to Duggi. (Office Action, at 5-13).

## Argument

### **I. Rejection of claims 19-38 as obvious in view of A Review of Current Routing Protocols for Ad Hoc Mobile Wireless Networks, IEEE, April 1999 to Elizabeth et al. and U.S. Patent Application Publication No. 2005/0041627 to Duggi**

#### **A. The Examiner's Burden of Proving Obviousness**

"All words in a claim must be considered in judging the patentability of that claim against the prior art." (MPEP § 2143.03). "If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious." (*Id.*)

Obviousness prevents the "issuance of a patent when 'the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art.'" *KSR International Co. v. Teleflex inc.*, 127 S.Ct. 1727, 1740 (U.S. 2007) (quoting 35 U.S.C. § 103). To show obviousness, an Examiner must show that the improvement is only "the predictable use of prior art elements according to their established functions." *KSR International Co. v. Teleflex inc.*, 127 S.Ct. 1727, 1740 (U.S. 2007).

"A statement that modifications of the prior art to meet the claimed invention would have been 'well within the ordinary skill of the art at the time the claimed invention was made' because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references." (MPEP § 2143.01). Rejections on obviousness cannot be sustained by mere conclusory statements; instead, **there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.** *KSR*, 82 U.S.P.Q.2d at 1396.

For instance, an invention that permits the omission of necessary features and a retention of their function is an indicia of nonobviousness. *In re Edge*, 359 F.2d 896, 149 U.S.P.Q. 556 (CCPA 1966). A conclusory statement to the contrary is insufficient to rebut such an indicia of nonobviousness. (See MPEP § 2143.01). As another example, "[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious." (MPEP § 2143.01). Further, "the proposed modification cannot render the prior art unsatisfactory for its intended purpose." (MPEP § 2143.01).

The Supreme Court set forth the "framework for applying the statutory language of § 103" in *Graham v. John Deere Co.*, 383 U.S. 1, (1966). *KSR International Co.*, 127 S.Ct. 1727, 1734, 82 U.S.P.Q.2d 1385 (U.S. 2007). To make an obviousness determination, underlying factual determinations must first be made. *Graham*, 383 U.S. at 17. The scope and content of the prior art must be determined, the differences between the prior art and the claims at issue must be ascertained, and the level of ordinary skill in the pertinent art must be resolved. *Id.* Moreover, obviousness must not be distorted by using hindsight bias or *ex post* reasoning. *KSR International Co.*, 127 S.Ct. at 1742 (U.S. 2007) (citing *Graham*, 383 U.S. at 36).

Secondary considerations may also be provided to show that an asserted combination would not render claimed subject matter predictable or obvious. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). These secondary considerations include failure of others, unexpected results and the prior art teaching away from the invention. *Id.* at 17-18; *In re Beattie*, 974 F.2d 1309, 1313 (Fed. Cir. 1992) (declarations from those skilled in the art praising the claimed invention and opining that the art teaches away from the invention should be considered); *In re Sullivan*, 498 F.3d 1345, 1352 (Fed. Cir. 2007).

## 1. Reliance On A Prior Art Reference Based On A Claim Of Priority

To rely on a reference as a prior art reference under 35 U.S.C. § 102(e) in view of a claim of priority in that reference to a previously filed application, the Examiner has the burden of identifying and finding the subject matter in that priority document that has the critical date the Examiner relies upon for citing the reference as a "prior art" reference. *See PowerOasis Inc. v. T-Mobile USA Inc.*, 86 U.S.P.Q.2d 1385, 1388, 522 F3d 1299 (Fed. Cir. 2008). As required by the MPEP, it is incumbent upon the Examiner to determine that a priority document, such as a provisional application, provides the support necessary for showing that a cited § 102(e) reference is prior art. *See* MPEP § 706.02(f)(1), § 2136.

Specifically, the MPEP states that "The 35 U.S.C. 102(e) critical reference date of a U.S. patent or U.S. application publications and certain international application publications entitled to the benefit of the filing date of a provisional application under 35 U.S.C. 119(e) is the filing date of the provisional application **with certain exceptions if the provisional application(s) properly supports the subject matter relied upon to make the rejection in compliance with 35 U.S.C. 112, first paragraph.**" MPEP § 2136.03 (emphasis added); *see also* MPEP § 706.02(f)(1). "The subject matter used in the **rejection must be disclosed in the earlier-filed application** in compliance with 35 U.S.C. §112, first paragraph, in order for that subject matter to be entitled to the earlier filing date under 35 U.S.C. § 102(e)." MPEP § 706.02(f)(1) (emphasis added). Typically, new matter is not supported in a provisional application. *See e.g., Augustine Med., Inc. v. Gaymar Indus., Inc.*, 181 F.3d 1291, 1302-03 (Fed.Cir.1999) ("Subject matter that arises for the first time in [a] CIP application does not receive the benefit of the filing date of the parent application.").

The factual finding made by the Examiner during prosecution concerning reliance on a provisional application to establish a reference as a prior art reference shifts the burden onto Applicants to show that the Examiner has not sustained his burden of proof. *Ex parte Yamaguchi*, 88 USPQ2d 1606, 1608 and 1614 (BPAI 2008) (precedential).

**B. Elizabeth et al. Teach Away From The Claims**

The Examiner has cited page 48 of Elizabeth et al. as suggesting the routers, service provider and service requester of the pending claims. (Office Action, at 5-6). To the contrary, Elizabeth et al. explicitly teach that the routers of the system disclosed on page 48 **"that are not on a selected path do not maintain routing information or participate in routing table exchanges."** (emphasis added).

Contrary to the explicit teaching of Elizabeth et al., the method and system of the pending claims require all the routers that receive a service discovery request message to update their routing tables in response to receipt of the message. Elizabeth et al., teach the opposite of this. Elizabeth et al. teach that routers should not be involved in maintaining route information upon receipt of any route request messages and should not maintain any routing information or update any routing tables unless they receive a route reply message from a destination device. (Elizabeth et al., at page 48, Figure 4). Elizabeth et al. explicitly teach that no maintaining of route information should occur by any router if that router is not ultimately used on a particular route selected by a destination device that sends a reply in response to a route request message. (*Id.*).

**C.     The Cited Art Do Not Teach Routers That Update Routing Tables After Receiving A Service Discovery Request Message**

The cited art also fails to teach or suggest any router that updates a routing table with routing information pertaining to a received service discovery request. Indeed, there is no teaching or suggestion of such a requirement in Elizabeth et al. or Duggi.

The cited art teaches that routing tables are only updated in view of "full dump" or "incremental packets" relayed between routers (page 47 of Elizabeth et al.) or via hello messages (page 49 of Elizabeth et al.). The systems disclosed in the cited prior art only teach or suggest the forwarding of discovery request messages to other routers until a service provider receives the message. There is no teaching or suggestion of any router being configured to update its routing table in response to the receipt of a discovery request message. Indeed, as discussed above, Elizabeth et al. teach that the routers **should not maintain routing information when receiving a discovery request message**. (Elizabeth et al. at 48 and Figure 4).

**1.     **It Is Impermissible To Combine Elizabeth et al. With Duggi****

Even if Duggi is improperly applied to the claims of the present application, it is impermissible to combine Duggi with a reference that explicitly teaches away from routers each maintaining their own routing table upon receipt of any route request messages as done by Elizabeth et al. "[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious." MPEP § 2143.01.

Here, the Examiner is combining one reference that teaches that routing tables should not update routing tables upon receipt of a route request message or maintain routing information for unrelated routes with another reference (Duggi) that teaches that nodes should know the IP address of all the other nodes in a network and maintain the routing information for all the nodes.

(Compare Elizabeth et al. at 48 with Duggi published patent application, at ¶¶ 37, 48). These two references directly contradict each other in view of the Examiner's construction of these references and combination made in the Office Action. This is improper. In view of the conflicting teachings made in these references they cannot be combined to reject the pending claims as done in the Office Action.

**D.     The Portions Of The Duggi Reference Relied Upon By The Examiner Are Not Prior Art. Therefore, All The Pending Claims Are Allowable**

The Examiner rejected all of the pending claims in view of a combination of cited art that includes the Duggi reference, which is a published U.S. Patent Application that claims priority to U.S. Provisional Patent Application Serial No. 60/497,274. This Provisional Application has no drawings and only includes about 1 page of substantive text. The Examiner has not cited to any portion of this reference to reject any of the pending claims. Instead, the Examiner relies on new matter in the published patent application to reject the pending claims.

The Examiner cannot rely on new matter introduced in the Duggi reference after the Duggi provisional application was filed. MPEP § 2136.03. Only the provisional application filed by Duggi is prior art to the pending application. The Examiner can only rely on the information provided in the Duggi provisional patent application. However, the Examiner has not cited to any portion of the Duggi provisional application to support his rejection of the pending claims. Instead, the Examiner has cited new matter in the Duggi published patent application. Therefore, the Examiner's reliance on the Duggi published patent application is improper and cannot provide a basis for rejecting the pending claims.

**E.     The Cited Art Fails To Teach Or Suggest  
All The Limitations Of The Pending Claims**

**1.     Claims 19-24 And 37 Are Independently Allowable**

Claim 19 is an independent claim directed to a method. Claim 19 requires each router to adding routing information pertaining to a received service discovery request message in the routing table of that router. Claim 19 also requires the at least a portion of the routers to add routing information of the received service discovery reply message to the routing table. Claims 20-24 and 37 depend from claim 19 and therefore also include the limitations of claim 19.

Neither Duggi nor Elizabeth et al. teach or suggest a router adding routing information pertaining to a received service discovery request message in the routing table of that router. For example, Elizabeth et al. teach that a router should only maintain route information for a route it participates in. Such a route is only a route that requires use of that particular router. There is no adding information to any routing information that occurs upon receipt of any path discovery process or route request message sent by a service requester taught or suggested by Elizabeth et al. (Elizabeth et al., Figure 4 and page 48-49).

Further, Duggi teaches that there is no adding of information to any router's routing table upon receipt of any service request message. In fact, Duggi does not even teach or suggest a service discovery request message.

Duggi discloses a system that requires all the nodes (MN 101 through MN 106) to be aware of the IP addresses of all the other nodes and to be able to directly communicate with those other nodes. (Duggi, ¶ 37). Duggi's disclosed invention is the use of "three new message formats to gather complete route information that may be used by other applications in" those nodes. (Duggi, ¶ 39). These new messages may permit debugging, graphical overviews of the network, or locating a particular node. *Id.* None of the nodes update their routing tables upon



receipt of any service discovery request message. To the contrary, each of the nodes already knows the IP address of all the other nodes and what services they provide. (Duggi, ¶ 37). The node routing tables are only updated when a new node is brought online or a particular route path is repaired. (Duggi, ¶¶ 17, 48-52).

Further, neither Elizabeth et al. nor Duggi teach or suggest any router that both updates its routing table upon receipt of a service discovery request message from a service requester and also updates its routing table upon receipt of a reply to that service discovery request message sent by a service provider. There is no teaching or suggestion of such a router in the cited art.

The cited combination of art alone in combination fails to teach or suggest all the limitations of the pending claims 19-24 and 37. The rejection of these claims should be reversed.

## **2. Claims 25-29 Are Independently Allowable**

Claim 25 is an independent claim directed to a method. Claim 25 requires each router of to add routing information pertaining to a received service discovery request message in the routing table of that router and also requires a portion of the routers that receive a service discovery reply message from a service provider to add routing information pertaining to the received service discovery reply message to the routing table of that router such that a route via the portion of the routers is traceable from the service requester to the service provider. Claims 26-29 depend from claim 25 and therefore also include the limitations of claim 25.

As discussed above with reference to claims 19-24 and 37, the cited art fails to teach or suggest a router that adds routing information to its routing table upon receipt of a service discovery request message and also has a portion of routers update their routing tables upon receipt of a reply to that service discovery request message sent by a service provider. Claims 25-39 are allowable over the cited art.

### **3. Claims 30-36 And 38 Are Independently Allowable**

Claim 30 is an independent claim directed to a system. Claim 30 requires a system to include a plurality of routers that each receives a service discovery request message multicasted from a service discovery requester. Each router updates the routing table of that router with routing information pertaining to the received service discovery request message. At least a portion of the routers also receive the service discovery reply message and update the routing tables of the IP routers with information pertaining to the received service discovery reply message that is sent from a service provider. Claims 31-36 and 38 depend from claim 30 and therefore also include the limitations of claim 30.

As discussed above with reference to claims 19-24 and 37, the cited art fails to teach or suggest a router that adds routing information to its routing table upon receipt of a service discovery request message and also has a portion of routers update their routing tables upon receipt of a reply to that service discovery request message sent by a service provider. Claims 30-36 and 38 are allowable over the cited art.

### **F. Claims 37 And 38 Are Independently Allowable**

The Duggi reference requires a router to already know the IP address of a destination a path marker request is sent to. (Duggi published patent application, at ¶¶ 37, 48). As stated in paragraph 37 of the Duggi published patent application, "Each one of the MANET nodes 101-106 is aware of the Internet Protocol (IP) addresses of all of the MANET nodes 101-106 and is capable of directly communicating with other ones of MANET nodes 101-106 via individual radio frequency (RF) links (or hops)."

Claim 37 depends from claim 19 and claim 38 depends from claim 30. Claims 37 and 38 each explicitly requires that "a destination address of the service provider device is unknown by

the service requester device when the service discovery request message is sent." Such a requirement is exactly opposite the requirement of the system taught by Duggi. None of the cited references alone or in any combination teach or suggest such a service discovery request message or the sending of such a message. Indeed, the Duggi reference expressly teaches away from such a system by requiring his nodes to know the addresses of all other nodes.

The Examiner relies upon Elizabeth et al. to provide some teaching or suggestion of a sending of a discovery request message as required by claims 37 and 38 to reject these claims. (Office Action, at 13). However, Elizabeth et al. do not teach or suggest any sending of service discovery request messages nor the updating of router tables as required by the pending claims. Elizabeth et al. cannot therefore teach or suggest the sending of such service discovery request messages as required by these claims. This is particularly true when, as discussed above, none of the cited art teaches or suggests a router that adds routing information to its routing table upon receipt of a service discovery request message and also has a portion of routers update their routing tables upon receipt of a reply to that service discovery request message sent by a service provider as required by claims 19 and 30.

Claims 37 and 38 are independently allowable over the cited art.

**G. Claim 26 Is Independently Allowable**

Claim 26 depends from claim 25 and requires the service discovery request message to be comprised of an indicator indicating to the routers that the routers should add routing information pertaining to the received service discovery request message to the routing tables of the routers. None of the cited art teaches or suggest such an indicator in a service discovery request message. As discussed above, Elizabeth et al. teaches away from routers updating or maintaining any

router information based upon a route request message. Further, as discussed above Duggi fails to teach or suggest any service discovery request message nor any indicator in such a message.

The Examiner cites a portion of Elizabeth et al. that supposedly discloses routers that update routing information based upon a received service discovery request message at page 48. To the contrary, no such information is updated. Routing information is only updated upon receipt of a reply to a route request message that is sent by a responding node, as may be appreciated from Figure 4b and page 48. In fact, as noted above, Elizabeth et al. expressly teach away from the updating of routing tables upon receipt of any service discovery request message.

Claim 26 is independently allowable over the cited art.

### CONCLUSION

For at least the above reasons, reversal of the rejection of claims 19-38 and allowance of these claims are respectfully requested.

Respectfully submitted,

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## **Claims Appendix**

The claims on appeal:

19. A method for establishing a connection between a service requester device and a service provider device in a decentralized mobile wireless network comprising a plurality of Internet Protocol (IP) routers, each router comprising a routing table, the method comprising:

the service requester device sending a service discovery request message towards a service provider device via the plurality of IP routers;

receiving the service discovery request message by each router;

each router adding routing information pertaining to the received service discovery request message in the routing table of that router;

receiving the service discovery request message by the service provider device;

the service provider device responding to the received service discovery request message with a service discovery reply message to the service requester device; and

at least a portion of the plurality of IP routers adding routing information of the received service discovery reply message to the routing table.

20. The method according to claim 19 wherein the service discovery request message is comprised of at least one element of a route request.

21. The method according to claim 19 wherein the service discovery reply message is comprised of a route reply incorporating all information elements of the route reply.

22. The method according to claim 19 wherein the service discovery request and service discovery reply messages are in accordance with an Ad hoc On Demand Distance Vector Routing Protocol or a Dynamic Source Routing Protocol for Mobile Ad hoc Networks.

23. The method according to claim 22 wherein the Ad Hoc On Demand Distance Vector Routing Protocol or the Dynamic Source Routing Protocol of the request message and the reply message is extended such that the routing table of a router is updated with routing information after the router receives the service discovery request message or the service discovery reply message.

24. The method according to claim 19 wherein the service requester device is a client and the service provider device is a server and wherein each router of the at least a portion of the plurality of IP routers adds routing information of the received service discovery reply message to the routing table of that router such that the a route is traceable from the service requester to the service provider.

25. A method for establishing a connection between a service requester and a service provider in a decentralized mobile wireless network comprising a plurality of routers, each router having a routing table, the method comprising:

the service requester sending a multicast service discovery request message towards a service provider via the plurality of routers;

each router receiving the service discovery request message;

each router adding routing information pertaining to the received service discovery request message in the routing table of that router;

receiving the service discovery request message by the service provider;

the service provider responding to the received service discovery request message with a service discovery reply message in response to the service discovery request message;

a portion of the plurality of routers receiving the service discovery reply message; and

each router of the portion of the plurality of routers adding routing information pertaining to the received service discovery reply message to the routing table of that router such that a route via the portion of the routers is traceable from the service requester to the service provider.

26. The method according to claim 25 wherein the service discovery request message is comprised of an indicator indicating to the routers that the routers should add routing information pertaining to the received service discovery request message to the routing tables of the routers.

27. The method according to claim 25 wherein the service discovery reply message is comprised of an indicator indicating to the routers that receive the service discovery reply message that routing information pertaining to the received service discovery reply message should be added to the routing tables of the routers.

28. The method according to claim 25 wherein the request message and the reply message are in accordance to an Ad hoc On Demand Distance Vector Routing Protocol or a Dynamic Source Routing Protocol for Mobile Ad hoc Networks.

29. The method according to claim 25 wherein the service provider is a server and the service requester is a client.

30. A decentralized mobile wireless network system, comprising:  
a network service available to a service requester;  
a plurality of Internet Protocol (IP) routers each having a routing table;  
the service requester configured to transmit a service discovery request comprised of a first routing indicator and information pertaining to a desired service,  
wherein the service discovery request message is multicasted from the service requester, and  
wherein each router receives the service discovery request message and updates the routing table of that router with routing information pertaining to the received service discovery request message;  
a plurality of service providers configured to receive the service discovery request message from the service requester, each service provider configured to transmit a service discovery reply comprised of a second routing indicator, each service provider configured to transmit a service discovery reply message to the service requester if that service provider determines that the service provider provides a service identified in the service discovery request message, each service provider configured to send the service discovery reply message such that the network is not flooded with the service discovery reply message,



wherein at least a portion of the plurality of IP routers is configured to receive the service discovery reply message and update the routing tables of the IP routers with information pertaining to the received service discovery reply message, and

wherein the service requester is configured to receive the service discovery reply message such that a connection between the service requester and the service provider providing the service identified in the service discovery request message is established in the network.

31. The system according to claim 30 wherein the portion of the routers is determined via a route determined from multicasting the service discovery request message and wherein the service requester is a client and each service provider is a server.

32. The system according to claim 30 wherein the service discovery request message and service discovery reply message are in accordance to an Ad hoc On Demand Distance Vector Routing Protocol or a Dynamic Source Routing Protocol for Mobile Ad hoc Networks.

33. The system of claim 30 wherein the service discovery request message is comprised of at least one element of a route request.

34. The system of claim 30 wherein the service discovery reply message is comprised of a route reply.

35. The system of claim 31 wherein the service discovery request message is comprised of at least one element of a route request.

36. The system of claim 30 wherein the service discovery reply message is comprised of a route reply incorporating all information elements of the route reply.

37. The method of claim 19 wherein a destination address of the service provider device is unknown by the service requester device when the service discovery request message is sent.

38. The system of claim 30 wherein a destination address of the service provider device is unknown by the service requester device when the service discovery request message is sent.

## **Evidence Appendix**

None.

### **Related Proceedings Appendix**

None.